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**RESPONSE UNDER 37 C.F.R. § 1.116  
EXPEDITED PROCEDURE - EXAMINING GROUP 2810**

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Ubaldo Mastromatteo  
Application No. : 10/037,485  
Filed : December 19, 2001  
For : PROCESS FOR MANUFACTURING INTEGRATED DEVICES  
HAVING CONNECTIONS ON A SEPARATE WAFER, AND  
INTEGRATED DEVICE THUS OBTAINED

Examiner : Hung K. Vu  
Art Unit : 2811  
Docket No. : 854063.665  
Date : August 23, 2004

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**RESPONSE TO ADVISORY ACTION UNDER 37 CFR 1.116**

Commissioner for Patents:

In response to the Office Action dated April 21, 2004, please extend the period of time for response one month, to expire on August 21, 2004. Enclosed are a Petition for an Extension of Time and the requisite fee.

Applicant reiterates the request made in the amendment of June 18, 2004, that the finality of the April 21, 2004 Office Action be withdrawn, for the reasons outlined on page 9 of the amendment.

Claims 1-12 and 30-41 are currently pending. Claims 3 and 32-34 are withdrawn.

In the Advisory Action of July 21, 2004, the Examiner has required an analysis of claims 30, 34, 35, 36, and 37, with respect to the extent to which these claims read on the embodiment of Figure 11. As the Examiner has acknowledged, the terms "on" versus "in," as

used in these claims, has already been discussed by the applicant in the response dated June 18, 2004. Accordingly, this issue will not be revisited.

Applicant withdraws the previous assertion that claim 34 reads on the embodiment of Figure 11, and withdraws claims 3 and 32-34 as being directed to non-elected species.

As the specification explains, in the paragraph beginning at line 25 of page 10, the chip 81 of Figure 11 is similar to the chip 51 of Figure 10. Referring, also, to the text on line 5 of page 11, the plug regions 68 of Figure 11 are also similar to plug regions 68 of Figure 10. Descriptions of the components features of the chip 81 and the plug regions 68 are found in the text describing those features with reference to Figure 10. Accordingly, in demonstrating that a claim in question reads on the embodiment of Figure 11, reference may, of necessity, be made to text in the specification that describes similar features of Figure 10. It should also be understood that correlation of features of the embodiment of Figure 11 with limitations of a claim under discussion is strictly for the purpose of demonstrating that the claim reads on the figure, and should not be construed as limiting the claim to those particular features, to the embodiment described, or to any embodiment disclosed in the specification. One having ordinary skill in the art will recognize many variations and embodiments not explicitly disclosed in the specification that fall within the scopes of the claims under consideration.

In reviewing the claims, the applicant has chosen to provide reference numerals from Figure 11 in parenthesis where appropriate to show correlation. In addition, page and line numbers from the specification of the present application are also provided, referencing the description of the features of Figure 11. For the most part, applicant regards this as adequate to demonstrate that the claim in question is generic, at least to the embodiment of Figure 11.

### Claim 30

Claim 30 recites,

forming integrated structures (57, 58, 59) (lines 9 and 10, page 9) in a first wafer (81) of semiconductor material, the first wafer including an exposed (top surface of 59, for example) semiconductor region;

forming, on a second wafer of semiconductor material (82) (line 27, page 10), a plug element (68) (line 5, page 11), including a base region (69) and a bonding region (70) (lines 5-8, page 10), the bonding region being of a metal material (line 7, page 10); and

bonding the first and second wafers together by causing the bonding region of the plug element to react with the exposed semiconductor region (lines 6, 7, 16-18 of page 10, and 28 and 29 of page 11).

Clearly, claim 30 reads on the embodiment of Figure 11, as demonstrated above.

Claim 35

Claim 35 recites,

forming integrated structures (57-59) (lines 11-12, page 9) including semiconductor regions (57-59) and isolation regions (55, 60) (lines 10 and 13 of page 9) in a first wafer of semiconductor material (81);

forming interconnection structures of conductor material on a second wafer (82) of semiconductor material, including forming plug elements (68), each having a bonding region (70) of a metal material capable of reacting with said semiconductor regions of said first wafer (lines 6-8, page 10);

forming a plurality of conductive regions (84) (lines 1-3 of page 11) on the second wafer;

forming connection regions (90) (lines 9-11, page 11) connecting the conductive regions together;

forming one of the plug elements (68) connected to one of the plurality of conductive regions (lines 6-8 of page 11); and

bonding said first wafer and said second wafer together, including causing said bonding regions to react with said semiconductor regions (lines 28 and 29 of page 11).

Thus, claim 35 reads on the embodiment of Figure 11.

Claim 36

Claim 36 recites,

forming integrated structures (57-59) in a first wafer of semiconductor material (81), the first wafer having a face (see upper surface of feature 59);

forming interconnection structures of conductor material on a face of a second wafer of semiconductor material, including forming plug elements (68) each having a bonding region (70) of a metal material capable of reacting with said semiconductor material of said first wafer (lines 6-8, page 10);

forming self-alignment structures on the respective faces of said first and second wafers, and aligning said first and second wafers in a face-to-face configuration, using said self-alignment structures (see reference to alignment process at lines 26-29 of page 11, lines 13-15 of page 10, and a detailed description of the alignment process, beginning at line 9 of page 7) and

bonding said first wafer and said second wafer together, including causing said bonding regions to react with said semiconductor material of said first wafer (lines 28 and 29 of page 11).

Each of the elements of claim 36 is either shown in Figure 11, or referenced in the description of the embodiment of Figure 11, as demonstrated above. Accordingly, claim 36 reads on the embodiment of Figure 11.

#### Claim 37

Claim 37 recites,

forming a structure in a first wafer of semiconductor material, including a movable component (57) (lines 9 and 10 of page 9);

forming an integrated electronic component (84) (see lines 1-3 of page 11 and lines 21-26 of page 13) in a second wafer of semiconductor material;

forming a bonding layer (68), including a base region (69) and a bonding region (70) of a metal material on a selected one of the first or second wafer; and

bonding the first and second wafers together by causing the bonding region of the bonding layer to react with an exposed semiconductor material region on the one of the first or second wafers not selected (lines 28 and 29 of page 11).

As demonstrated, claim 37 reads on the embodiment of Figure 11.

Each of the claims outlined above has been demonstrated as reading on the embodiment of Figure 11, and accordingly, should be reviewed at this time by the Examiner. Additionally, as explained in the applicant's previous response, at least claims 1 and 41 are generic to all the species. Accordingly, even should the Examiner disagree with some, or all, of the applicant's assertions in the present response, applicant respectfully requests that the

Application No. 10/037,485  
Reply to Final Office Action dated April 21, 2004 and  
Advisory Action dated July 21, 2004

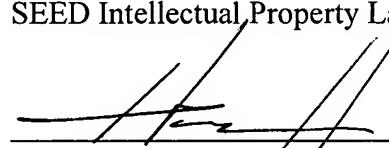
Examiner consider the patentability of claims 1 and 41, and, in the event that a generic claim is found to be allowable, that the Examiner give full consideration to claims previously withdrawn by the applicant or by the Examiner as not reading on the elected species. Applicant takes note of the restriction requirement of July 1, 2003, in which the Examiner states, "Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 C.F.R. § 1.141."

Favorable consideration and a Notice of Allowance are earnestly solicited.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,

SEED Intellectual Property Law Group PLLC



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